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Soft Water
in
Every Home

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Important Facts You Should Know About Water

WATER is an essential of every phase of modern life, and we have such an important relation to health and personal comfort that everyone should become more aware of the characteristics of water that make it desirable in domestic, industrial and personal uses.

Water is the greatest solvent known to man, that is, it will dissolve readily a greater number of substances than any other liquid, and for that reason it always contains many impurities. As water falls from the sky in the form of rain, it gathers up all the particles of dust, smoke, impurities and bad gases that have risen from the ground and are floating about in the air. When it strikes the surface, some of it runs off along the surface making brooks and rivers, and some soaks into the ground to form springs and to supply our artesian wells. In any case the water is in contact with the earth passing over it through it, and its wonderful dissolving power is kept at work gathering up mineral and organic impurities at every foot of progress.

If it is surface water, that is, a brook, or river, it will pick up and carry along small

particles of the earth's surface in addition to dissolving some of it, so that the water will be "rily" or turbid as well as contain dissolved minerals. Spring or well water on the other hand is generally filtered by its passage through the earth and therefore is usually quite clean, but by reason of being in contact with the rocky formation under the ground, it contains more dissolved substances than surface water and so contains more hardness.

What Is Hard Water?

"Hard Water" is the name applied to any water containing lime or magnesia compounds in solution, the amount of lime and magnesia determining the degree of hardness. These compounds effect the lathering properties of soap, so that a hard water may be distinguished by the fact that it is more difficult to wash with than a soft water. Unfortunately for mankind, lime and magnesia compounds are distributed everywhere throughout the earth's surface so that although some water supplies are softer than others, it is a rare occurrence to find soft

water existing in nature. Until Permutit was developed, absolutely soft water, containing no



Hard water regularly forms scale in kettles and boilers. In the young boiler shown, the scale is especially visible.

hardness (zero water) had been produced only in the laboratory. Today, however, zero water, as accurate as the most scientific laboratory product, is available in every home.

Soft Water in the Home

The advantages of clean, soft zero water in a household are really tremendous, for many troubles and discomforts that are attributed to other causes can be traced to hard water. The hardness, that is, the lime and magnesia compounds that are always present in untreated water, combine with soap, making it difficult to obtain a good lather as previously stated, but that is not all. In combining with soap, these compounds form an insoluble sticky curd that causes trouble and does damage in a multitude of ways not generally known outside of scientific circles. It is the soap curds, not dirt, that leave a line of deposit around a bath tub or wash basin after washing, and travelers on Western railroads will recall the washing difficulties encountered where the water supply is particularly hard.



The lime and magnesia in hard water will deposit in pipes wherever there is hard water, interfering with the proper flow of water and increasing heating, cooling and condensation.



The Bath

When soap is used with hard water in the bath, the sticky soap curds that are formed work into the pores of the skin, clog them up and prevent the free exit of body impurities that is essential to a smooth, clear, healthy skin. Not only does this affect the complexion and the general condition of the skin, but it must necessarily be detrimental to the health, for it is known that a man coated with varnish would live but a few days, and although hard water soap curds are far less effective than varnish, they nevertheless clog up the skin pores to no small extent. Furthermore, they are responsible for real bodily discomfort.

Everyone is familiar with the fact that an object can be kept cool on a hot day by covering it with a damp cloth, the evaporation having a cooling effect. That is the principle utilized for cooling drinking water in the army, and for the iceless ice-boxes that are so effective in summer, and it is also the principle provided by Nature to keep mankind

cool in hot weather, by evaporation of moisture exuded from the pores of the skin. The hard water soap curds interfere with Nature's cooling process, and result in a sticky, clammy discomfort too well known to require description. The soft water supplied to Permutit cannot possibly form those sticky soap curds, for all hardness is removed from the water, and Permutit owners are loud in their exclamations of delight at the unexpected benefits and comforts derived from the use of soft water. It is available for small children.

The Shampoo and Shave

In shampooing with hard water the insoluble soap curds are deposited on the hair, making it sticky, and usually determining its fate. Hundreds of hair-dressing establishments have adopted Permutit for that reason, and because soft water has been shown to impart its soft, delightful texture and beautiful gloss to the hair, and a clean, vigorous health to the scalp. For shaving, the heavy, long-lasting



lather produced by zero water quickly softens the beard, and imparts a genuine comfort unknown to hard water users.

The Laundry

In the laundry soft water imparts a snowy, dry fluffiness, and a sweet smelling cleanliness to the wash that is absolutely unknown to hard water users. The absence of sticky soap curds gives a longer life to linens and produces a quality in woolens and dainty laces that cannot be surpassed. Colored goods take on a brighter hue, and delicate fabrics may be laundered without fear of harm. Textile mills and laundries the country over have found zero water to be absolutely invaluable



in producing the highest quality of work and for the same reasons, a Permutit System in the home adds unknown delights to the donning of fresh laundered linens. In the washing process too, considerable quantities of soap are actually saved by the use of zero water, an economy that is duly appreciated.

The Heating System

In addition to its destructive property of forming soap curds, the hardness in water has another unfortunate characteristic in precipitating one in the form of a hard insulating scale, when subjected to heat.

When hard water is heated, for example, the lime and magnesia compounds will deposit on the walls of the boiler, in the pipes and connections leading from the boiler, or wherever there is heat. This results in the charring of paper in steam and water heating systems, and boilers and hot water coils. When the pipes become "fouled up" or fouled with a layer of scale, they require more fuel to obtain the necessary amount of heat, for scale is a very efficient insulator. Leaks and bursts in pipes also result. This will work from a Permutit system and produce a considerable saving in any plant of a factory, where it is installed. By the fact that hundreds of Permutit Systems are in use in large commercial heating plants in this very country. The increase in efficiency of heating systems, the reduced trouble from leaks, bursts and burned out pipes, and the valuable saving of fuel is a matter of



FIG. 1. A cross-section of a pipe showing the effect of scale deposition. The scale is a hard, insulating layer that builds up on the inner surface of the pipe, reducing the flow of water or steam.

considerable satisfaction to Permutit owners. The reduction in repair and fuel bills also forms a saving of no small consequence.

The Kitchen

In the kitchen, pots and pans will be found to take on a brighter lustre when zero water is used, but it is in the cooking that its use becomes of really great importance. To cook food, heat must be applied exactly as is done in the heating system, and as in that case, scale is deposited by the lime and magnesia compounds, but *it is deposited on the food that*

is being cooked.

Vegetables, such as peas, beans, corn, beets, or things having a skin or fibre structure are particularly susceptible to these hard water deposits, and are made harder or tougher to a marked degree. Leading canning factories and preservers of fruits and jams have installed Permutit Softeners in their





for your home. Write us at once, or ask your architect to get you all the details, for it can be installed with your original plumbing and will keep the heating system and all the piping throughout your house in good condition from the start.

What Permutit Costs

The size and cost of a Permutit System depends upon the amount of hardness in the water and the quantity of water used. The first factor can only be determined by a reliable laboratory analysis, and this the Permutit Company will do free of charge. The second may be estimated from the number of people in your household, including servants, and average number of guests. If soft water is desired in the garage, stables or similar places, the quantity can be estimated from the general number of faucets to be supplied, and information concerning the uses to which it would be put.

How to find the Cost for Your Home

To obtain an estimate of the cost of a Permutit System in your home, fill out carefully and accurately the post card enclosed in this booklet, and mail to the Permutit Company, 440 Fourth Ave., New York City. If you live in a large city an analysis of the



Permutit is perfectly adapted to the removal of hardness from water, and the results are obtained in almost any quantity.

water will be on file at the Permutit Office, but should you be supplied for a town or village system, or have your own water supply, fill a clean half gallon jar or bottle; it must be earthenware or glass, and mail it by express to the Permutit Company.

Be sure that the bottle is necked tight, and packed to prevent breakage and leakage in the winter. A small wooden box packed with excelsior, sawdust, or crumpled newspapers, will serve excellently.

Soft Water for Every Home

Thousands of Permutit Water Softeners are in daily use. They are being introduced continuously in all parts of the country, and the apparatus built for households now is just as accurate, just as scientific as the large industrial machines that are being used for the

most exacting commercial and scientific purposes. The Permutit Company stands behind its record of producing only the best that man can devise, and offers in testimony of that fact thousands of references from satisfied Permutit owners in every industrial enterprise and private pursuit.

Prominent hotels are Permutit equipped, leading hospitals use it for the protection and comfort of their patients, and many of the foremost doctors in the country have Permutit in their homes. It is a comfort, not a luxury, and a safeguard in the home that is established and recognized in all parts of the globe.

Nature's Cleanser

Soft water has been truthfully called "Nature's Cleanser," for in the form of rain from the clouds it is the great solvent, the universal purifier of all things in nature. How wonderfully soft and sleek is the fur of wild animals washed only by rain water, and how refreshing is the air when it has been swept clean of dust and gases after a gentle fall of rain.

Permutit brings to the home all the delights, all the benefits of this wonderful tonic, and its words can adequately convey the pleasure, the satisfaction, that becomes the daily portion of Permutit owners.





BRANCH OFFICES

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BOSTON, MASS.
10 Male Street

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104 Bradburn Building

CHATTANOOGA, TENN.
472 Volunteer State Life Bldg.

CHICAGO, ILL.
245 S. La Salle Street

CINCINNATI, OHIO
Union Central Bldg.

CLEVELAND, OHIO
700 B. T. Keith Building

DAYTON, OHIO
108 Resling Building

DETROIT, MICH.
204 Owen Building

KANSAS CITY, MO.
310-311 Lathrop Building

LOS ANGELES, CAL.
909 Wright-Caldender Building

MINNEAPOLIS, MINN.
1046 McKinnell Building

PHILADELPHIA, PA.
515 Liberty Building

PITTSBURGH, PA.
201 Union Trust Building

SAN FRANCISCO, CAL.
507 Balboa Building

AGENTS

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224 Olive Street

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